

Roll No.

Total Pages: 03

1214/MH

AS-2058

ELECTRICITY AND MAGNETISM-II

Paper-C

Time Allowed : Three Hours]

[Maximum Marks : 30

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 5 marks each and attempt any **five** questions from Section C carrying 2 marks each.

SECTION-A

1. State Ampere's circuital law and find the magnetic field at a point outside a long current carrying conductor.
2. Define magnetic permeability and magnetic susceptibility and establish relation between them.

3. What is hysteresis loss? Show that hysteresis loss per cycle of magnetisation is equal to area of M-H loop.
4. State Biot-Savart's law. Derive an expression for magnetic field due to a long current carrying solenoid.

SECTION-B

5. What is self inductance? Derive an expression for the self inductance of a long solenoid.
6. What is quality factor of resonance circuit. Obtain its value for a series LCR resonant circuit.
7. Show that divergence of magnetic field \vec{B} is always zero.
8. What is Hall effect? Derive an expression for Hall coefficient.

SECTION-C

9. Attempt any **five** :
 1. What is Curie temperature?

2. What are the properties of ferrites?
3. On what factors does mutual inductance two coils depend?
4. Write two applications of Hall Effect.
5. What is the condition of resonance for LCR circuit?
6. Write Maxwell's equations for electromagnetic induction.
7. Define vector potential.